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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/819,304	03/28/2001	John Patrick McIntyre JR.	6208-018	4056

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EXAMINER	
WRIGHT, JAMES B	

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3693	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/819,304	Applicant(s) MCINTYRE ET AL.	
	Examiner J. Bradley Wright	Art Unit 3693	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Acknowledgements

1. The examiner for this application has changed. Please indicate Examiner J. Bradley Wright as the examiner of record in all future correspondences.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed concurrently with the request on 5/29/2007 has been entered.

Claim Objections

3. Claims 1-6 are objected to because of the following informalities:
 - The term "theinstrument" in claim 1, line 10 should read "the instrument".
 - The term "theinstruments" in claim 1, lines 9 and 14 (two instances); claim 2, line 4; claim 3, lines 1 and 4 (two instances); claim 4, line 2; and claim 5, line 1 should read "the instruments".
 - The term "theuniverse" in claim 1, lines 8, 13, 14 and 15 (four instances); claim 2, line 3; and claim 3, line 2 should read "the universe".
 - The term "theresidual" in claim 1, line 8 should read "the residual".

- The term "theone" in claim 1, lines 12 and 14 (two instances) should read "the one".
- The term "theindex" in claim 1, line 12 should read "the index".
- The term "the the residual" in claim 1, lines 14-15 should read "the residual".
- The term "theentity" in claim 3, line 5 and claim 4, line 2 should read "the entity".
- The term "thesome" in claim 3, line 4; claim 4, line 2; claim 5, line 4; and claim 6, line 2 should read "the some".
- The term "thecorrelation" in claim 4, line 1 should read "the correlation".
- The term "thecountry" in claim 6, line 2 should read "the country".

The line numbers relate to the claims as presented in the response filed on 9/11/2006. Appropriate correction is required.

4. Similar to the objection to claim 13 previously presented in the Office Action of 12/19/2005, claim 33 is objected to on the grounds that the equations presented therein fail to particularly define each of the symbols used in the claim. Further, it is noted that several of the symbols in the claimed equations remain undefined in amended claim 13. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claims 1-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. **Regarding claims 1 and 21**, it is unclear as to whether only a covariance matrix is assigned to the universe, or whether a covariance matrix and a correlation matrix are separately assigned. For the purposes of examination, it is interpreted as only the covariance matrix, which is composed of both the variances and the correlation matrix.

7. **Regarding claim 13**, the claim defines the term w^T to be a vector of instrument weights. However, the term is not utilized in any of the preceding equations, and, thus, is unclear as to its relation to the claim.

8. **Regarding claim 21**, the claim recites a program code causing the computer to form an index, and then proceeds to recite further steps a-i. However, steps a-i appear to involve the formation of the index. As such, it is unclear as to whether steps a-i are sub-steps of the first step of forming an index, or whether steps a-i are merely additional steps. In particular, the sentence structure and punctuation utilized render the above unclear. Namely, the step to "form an index" ends with a semi-colon, which would seem to indicate that steps a-i that follow are sub-steps thereof. If not, the routine laid out in steps a-i would be duplicative of the first step of forming an index. For the purposes of examination, steps a-i are assumed to be sub-steps of the step of forming an index.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-4, 13-16, 18-24, 33-36 and 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Michaud, et al. (US Patent No. 6,003,018) in view of Labe Jr., et al. (US Patent Application Publication No. 2002/0091605), Olsen, et al. (US Patent Application Publication No. 2002/0123951), and the Admitted Prior Art disclosed in the Background of the Application (the "APA").

10. **Regarding claims 1 and 21**, Michaud discloses a method and program code for generating a portfolio including assigning a covariance matrix, calculating a residual variance for each of the instruments in the universe, and calculating a residual variance for the universe based on the residual variance for each of the instruments (column 1, line 55 – column 2, line 8 and column 3, line 35-column 4, line 7). In particular, Michaud discloses that the variance of a portfolio may be stated as the sum of the weighted variances of the individual assets (column 1, lines 34-50). Michaud further discloses that such portfolio optimization is a statistical procedure, based on estimated returns subject to a statistical variance (column 3, lines 39-44).

Michaud further discloses that since the input data used for mean-value (MV) optimization are of a statistical nature (i.e., characterized by means with associated variances and other statistical measures), the input data may be iteratively resampled to generate a set of statistically equivalent portfolios that may correspond to a minimum variance (column 3, lines 44 – column 4, line 7). However, Michaud does not explicitly disclose that the iterative resampling may include removing and reinstating each of the instruments from and to the universe when calculating the variance of the universe during optimization.

Labe, in an analogous art, discloses an asset allocation optimizer and that in conventional MV analysis there is a typical requirement that an asset in the portfolio should comprise between zero and 100% of the portfolio for the purpose of imposing a mathematical programming solution (paragraphs 0090 and 0092). The Examiner notes the assigning an asset to be zero percent of the portfolio (i.e. assigning the asset zero weight) is the functional equivalent of removing the asset from the portfolio for the analysis, and assigning an asset to be any percent greater than zero is the functional equivalent of inserting the asset into the portfolio for the analysis. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the input data used in the iterative resampling of the MV optimization of Michaud to include data inputs that assign the weight or percentage of a particular asset to be between zero and 100 percent during each resampling, in order to impose a mathematical solution, as taught by Labe.

Michaud further does not explicitly disclose that that the covariance matrix includes a correlation matrix, or an iterative process that progressively eliminates instruments from the universe being analyzed.

Olsen, in an analogous art, discloses a method for portfolio allocation including variance and covariance models in which basic correlation models define correlations between pairs in order to determine the correlation matrix, and its resultant covariance matrix, for the purpose of ensuring that the matrices are non-negative definite for solvability purposes (paragraphs 0230-0237). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the covariance matrix of Michaud to be associated with a correlation matrix, as taught by Olsen.

Olsen further discloses 24 that the method for determining a portfolio may include computing a current portfolio, selecting at least one of the assets in the current portfolio to change, changing a quantity of said at least one selected asset of the current portfolio to create at least one re-allocated portfolio, assigning the re-allocated portfolio to the current portfolio, and repeating the changing quantities of the at least one selected asset and the assigning said re-allocated portfolio (page 21, column 1, lines 11-27) for the purpose of determining the optimum allocation of assets within the portfolio. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the optimization of Michaud to include an iterative process that progressively eliminates instruments from the universe being analyzed to ensure the optimum allocation of assets within the portfolio, as taught by Olsen.

Michaud also fails to teach an index per se. However, the APA discloses that a financial index is a statistical construct that measures price changes, returns, interest rates and/or other financial data in stock markets, fixed income markets, currencies or futures markets. The APA further teaches that an index is typically formed by selecting a universe of instruments whose performance the index is to track, and that the purpose of forming an index is to provide a summary measure whose behavior is representative of the movements of prices or rates of a basket of securities and thus indicative of the behavior of a broad market, and may be used as benchmarks against which investment results are measured as well as for implementing various investment strategies such as asset allocation, relative value analysis, and portfolio analysis (page 2, lines 5-19). Therefore, it would have been obvious to one of ordinary skill in the art at the of invention to combine the teachings of Michaud, related to selection of a portfolio of instruments based on residual variances, with the teachings of the APA, related to forming a market index, for the purpose of providing a summary measure whose behavior is representative of the movements of prices or rates of a basket of securities and thus indicative of the behavior of a broad market, as taught by the APA.

11. **Regarding claims 2 and 22**, Michaud further teaches the method and program code comprising calculating a variance for each of the instruments in the universe; and assigning a correlation value between a plurality of pairs of the instruments in the universe (column 1, lines 34-40).

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12. **Regarding claims 3 and 23**, Michaud further teaches the method and program code wherein some of the instruments in the universe are associated with an entity and wherein the step of assigning a correlation value further comprises the step of: assigning a correlation value between each of the some of the instruments associated with the entity (column 5, line 37 – column 6, line 16).

13. **Regarding claims 4 and 24**, Michaud further teaches the method and program code wherein the correlation value between each of the some of the instruments associated with the entity is identical (column 5, line 37 – column 6, line 16).

14. **Regarding claims 13 and 33**, Michaud does not expressly teach the method and program code reflected in the equation presented in this claim. However it would be an obvious modification to the statistical analysis presented in Michaud to further calculate the residual variance as described in the equation. The motivation for modifying Michaud is simply to achieve the most statistically complete indexing as possible.

15. **Regarding claims 14 and 34**, Michaud further teaches the method and program code wherein the index is formed when a predetermined number of instruments in the universe are inserted into the index (column 5, line 37 – column 6, line 16).

16. **Regarding claims 15 and 35**, Michaud further teaches the method and program code wherein the index is formed when a predetermined percentage of the instruments in the universe are inserted into the index (column 5, line 37 – column 6, line 16).

17. **Regarding claims 16 and 36**, Michaud teaches the method and program code wherein the predetermined percentage is a percentage of the universe of N instruments on a weighted basis (column 5, line 37 – column 6, line 16).

18. **Regarding claims 18-20 and 38-40**, Michaud does not expressly teach the method and program code wherein the instruments are fixed income instruments, equities, or FX securities.

However, these instruments are old and well known in the finance arts, and as such the examiner took Official Notice in the Office Action mailed 12/19/2005 that an index would be comprised of these instruments, and that it would have been obvious to one of ordinary skill in the art to modify Michaud to include specific instruments in the indexing. The Office Action noted that the motivation for such a modification would be to simply to include the major instruments in order to ensure investors that the indexing is thorough and complete.

The Examiner notes that MPEP § 2144.03(C) states, in respect to an examiner's use of Official Notice:

To adequately traverse such a finding, an applicant must specifically point out the supposed errors in the examiner's action, which would include stating why the noticed fact is not considered to be common knowledge or well-known in the art. See 37 CFR 1.111(b).

The same section continues:

If applicant does not traverse the examiner's assertion of official notice or applicant's traverse is not adequate, the examiner should clearly indicate in the next Office action that the common knowledge or well-known in the art statement is taken to be admitted prior art because applicant either failed to traverse the examiner's assertion of official notice or that the traverse was inadequate. If the traverse was inadequate, the examiner should include an explanation as to why it was inadequate.

As noted in the Final Office Action mailed 12/1/2006, since Applicant did not traverse the Examiner's use of Official Notice in the response filed 5/19/2006, the examiner thus considered as admitted prior art, the elements of Claims 18-20 and 38-40.

19. Claims 5-12 and 25-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Michaud, Labe, Olsen, and the APA, as applied above, and further in view of Ricketts, et al. (US Patent Application Publication No. 2005/0137963).

20. **Regarding claims 5 and 25**, Michaud does not expressly teach the method and program code wherein some of the instruments in the universe are within a sector in a country and wherein the step of assigning a correlation value further comprises the step of assigning a correlation value between each of the some of the instruments within the sector in the country.

However, Ricketts teaches these limitations (paragraphs 0080 and 0123). It would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to combine the teachings of Michaud, related to selection of a portfolio of instruments based on residual variance, with the teachings of Ricketts,

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related to assigning a correlation value between each of the some of the instruments within the sector in the country. The motivation for such a combination is to give a macro-view of market movement to an individual to achieve micro-level investing. In this way, the investors can make better informed decisions, leading to increased use in the system.

21. **Regarding claims 6 and 26**, Michaud does not expressly teach the method and program code wherein the correlation value between each of the some of the instruments within the sector in the country is identical. However, Ricketts teaches this limitation (paragraphs 0080 and 0123). The references can be combined under the same motivation as with claims 5 and 25, discussed above.

22. **Regarding claims 7-8 and 27-28** Michaud does not expressly teach the method and program code wherein some of the instruments in the universe are within a first sector and some of the instruments in the universe are within a second sector and wherein the step of assigning a correlation value further comprises the step of assigning a correlation value between each of the some of the instruments within the first sector and each of the some of the instruments within the second sector; and the correlation value between each of the some of the instruments within the first sector and each of the some of the instruments within the second sector is identical. However, Ricketts teaches these limitations at (paragraphs 0080 and 0123). The references can be combined under the same motivation as with claims 5 and 25, as discussed above.

23. **Regarding claims 9-12 and 29-32**, Michaud does not expressly teach the method and program code wherein instruments are associated with various companies, sectors, and countries in any combination. However, as discussed above, Ricketts teaches adjusting the index according to these very factors (paragraphs 0080 and 0123). Also as discussed above, the motivation to combine the references exists in that a macro-view of market movement is available to an individual to achieve micro-level investing.

Allowable Subject Matter

24. Claims 17 and 37 would be allowable if rewritten to overcome the objections and rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action, and to include all of the limitations of the base claim and any intervening claims.

Response to Arguments

25. Applicant's arguments with respect to claims 1 and 21 have been considered but are moot in view of the new ground(s) of rejection.

26. Applicant's arguments with respect to the rejection of claims 18-20 and 38-40 regarding the Examiner's use of Official Notice have been fully considered and are not persuasive. As discussed above, the Examiner clearly indicated in the Office action mailed December 1, 2006 that the common knowledge or well-known in the art statement was taken to be admitted prior art because Applicant failed to traverse the

Examiner's assertion of Official Notice in the previous response filed by Applicant on May 19, 2006 (see MPEP § 2144.03(C))

Conclusion

27. The following prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Baker (US Patent No. 6,336,103) discloses a rapid method of analysis for correlation of asset return to future financial liabilities.
- Fernholz (US Patent No. 5,819,238) discloses an apparatus and accompanying methods for automatically modifying a financial portfolio through dynamic re-weighting based on a non-constant function of current capitalization weights.
- Dembo, et al. (US Patent No. 7,171,385) discloses a system and method for trading off put and call values of a portfolio.
- Weber, et al. (US Patent Application Publication No. 2004/0186803) discloses systems and methods for trading actively managed funds.
- Jones, et al. (US Patent No. 7,016,870) discloses identifying a recommended portfolio of financial products for an investor based upon financial products that are available to the investor.
- Giansante, et al. (US Patent No. 6,275,814) discloses an investment portfolio selection system and method.
- Takeda, et al. (US Patent Application Publication No. 2003/0004845) discloses a presentation of optimum portfolios.

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- Lear (US Patent No. 6,912,509) discloses an investment portfolio selection method.
- Kihn (US Patent No. 7,020,629) discloses a momentum investment system, process and product.
- Green (US Patent No. 7,013,291) discloses a financial instrument filtering system and method therefor.
- Garman (US Patent No. 5,819,237) discloses a system and method for determination of incremental value at risk for securities trading.

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to J. Bradley Wright whose telephone number is (571) 272-5872. The examiner can normally be reached on M - F 8:30am - 5:00pm.

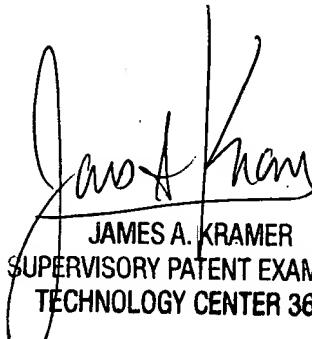
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James A. Kramer can be reached on (571) 272-6783. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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jbw

 6/21/07
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